JPRS 78327

18 June 1981

Worldwide Report

NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 101

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USSR, FRANCE COMPETE TO SELL NUCLEAR PLANT TO FINLAND

Helsinki HELSINGIN SANOMAT in Finnish 12 May 81 p 23

[Article by Risto Valkeapaa: "Assistant General Manager Kalevi Numminen: No Political Risks in Nuclear Power Plant Competition"]

[Text] According to Imatran Voima Oy (Imatra Power Company; IVO) administration member Kalevi Numminen, competition between Soviet and French suppliers for the nuclear power plant project must be scrutinized in the same way as any other industrial project competition.

In Numminen's opinion, it does not essentially differ from, for example, competitive bidding for a wood-processing or coal plant project. "Speculation as to any risks that might be incurred due to a competitive situation is pointless too because there is no longer any national ambition involved in these matters."

Numminen feels that the current situation is notably different from the one that existed at the end of the 1960's. At that time the international trade in nuclear plants was just beginning and the nuclear power nations were eager to engage in international competition.

According to Numminen, Finland will manage with its existing plants and those on which decisions have already been made, at least until 1988-1989. Thus a big new power plant would be needed at the earliest by 1990.

In the competitive bidding set in motion for the acquisition of a nuclear power plant, Finland's point of departure has been that the Soviet Union and France have most intensively of all the countries in the world invested in nuclear power. Numminen said that in addition to them Japan is the third country that has intensively invested in nuclear power.

While the nuclear plant at Loviisa's second unit was under construction, the Finns had already completed negotiations for a third unit at Loviisa, to be built shortly after completion of the second one.

The French alternative came at an opportune moment a little under a year ago as a result of President Valery Giscard d'Estaing's visit. Finland has also reached an agreement with France for a feasibility study on the French plant. A similar agreement with the Soviet Union is in the offing.

The last time Finland organized international competitive bidding on a nuclear plant project was at the end of the 1960's. In addition to England and Sweden, the Soviet Union was in the final running in June 1968.

However, the competitive setup at that time dramatically fell apart. The Council of State unanimously decided to abandon the project. Prime Minister Mauno Koivisto announced to the press: "Obviously we cannot procure atomic power for Finland through competition. If we attempt to get the big powers to compete with one another, if we try to sway them through competition, they will begin to sway us too. Resolving the matter of competitive bidding for atomic power in a way satisfactory to all concerned has proven to be impossible. As regards such an important matter, Finland has not wished to jeopardize the favorable trade relations it enjoys by engaging in any sort of competition with a country that is a trading partner."

"Business Is Business"

Kalevi Numminen of IVO, who has been appointed future general manager, says that the nuclear power plant trade is at the present time based on economic rather than political trading. Among other things, during the construction phase of the first Loviisa unit Numminen served as the plant's project head.

"In my opinion, political ambitions are not involved in these matters. Naturally, every firm engaged in selling competes vigorously. But business is business and firms compete against one another."

In Numminen's opinion, in competition over nuclear power plants there is no "terrible" general trade policy significance attached to the matter either. The effort to achieve as high a degree of domestic participation as possible has a partial effect on the situation. The aim is to see to it that two-thirds of the next nuclear plant will involve domestic labor and production.

"If the plant costs 5 billion marks, the imported portion would remain just under 1.7 billion marks. Then too, this would further be distributed over 6 years. Compared with the total annual volume of imports from the Soviet Union, 12 billion marks, the amount attributable to the nuclear plant would be small, under 3 percent."

Then too, the fact that the balance of trade situation has reversed since the end of the 1960's is regarded as an essential factor of change in trade conducted with the Soviet Union. Among other reasons, thanks to the oil it possesses, the Soviet Union has no trouble whatsoever in taking care of its own share of the trade.

According to Numminen, as far as the French alternative is concerned, we are making an effort to achieve more or less the same degree of domestic participation as with the Soviets. Under no circumstances, however, would the French plant be essentially more significant in terms of trade policy. "Citroen and Peugeot certainly export more to us than what a nuclear plant sale would mean," Numminen said.

Feasibility Study Being Weighed

The IVO is right now engaged in an extensive feasibility study through which it is trying to weigh the suitability of different kinds of energy production. This feasibility study should be completed by the end of 1982.

Finland has an agreement with the French on a feasibility study for a nuclear power plant. According to Numminen, an agreement with the Soviets on a plant feasibility study is soon to be reached.

This feasibility study on a Soviet plant has, however, actually already been in progress for a long time now. Numminen said that we have been constantly meeting with the Soviets in connection with the Loviisa plant construction projects and closely following them too.

The most problematic aspects of the agreement now being reached with our Soviet partner are a clarification of the degree of domestic participation and the extensiveness of the agreement itself, or ironing out the details.

Two-Thirds Domestic Participation

At the moment it appears that the next nuclear plant will involve more domestic participation than the present ones. If the plant is ordered from the Soviet Union, Atomenergoexport would supply only the most essential heavy parts: the pressure vessel, primary circuit tubing, heat exchangers, pressurizers and turbines. Numminen said that everything else would come from Finland.

"An overwhelmingly large share of the construction will involve domestic participation. The second most important point is the plant's whole electrical system. Finnish industry will certainly also be capable of manufacturing the pumps, conduits, heat exchangers, etc."

Numminen did not assess the French report very extensively. "We have not familiarized ourselves with the French project as thoroughly as we have with the Soviet project. It is a new project which we have just begun to look into."

Politicians Decide

Political decision-makers should be able to arrange for the projects on the basis of feasibility studies. "Among others, environmental issues and long-term risk considerations are, however, hard to assess," Numminen maintained. By long-term risk considerations he means primarily the evolution of fuel prices and fuel availability.

"Aside from the purely economic calculation of costs, there are questions as to value stipulations which it is extremely difficult to pose in terms of the same scale. In our study we are trying to objectively expose all points of view. In the end, however, in a long-range comparison of abstract concepts there is no other basis than sound common sense."

Among other things, how extensively sound common sense is to be appealed to will be decided in accordance with the new nuclear energy law. It is expected that the new law will be ready before the end of the year. According to the bill, a Council of State decision must be submitted to Parliament for approval.

Among others, the Energy Policy Council, whose position has been that decisions on nuclear power should be approved by Parliament in accordance with the law, has demanded greater power of decision for Parliament.

At the present time, on the basis of the nuclear energy law now in effect, a Council of State decision to grant permission for the construction of a nuclear plant is not required. The laws are contradictory inasmuch as, on the basis of the electricity law which went into effect a couple of years ago, a decision to grant permission is made by the Council of State.

France Versus the Soviet Union

Electricite de France's 900-Mw plant and Atomenergoexport's 1,000-Mw plant are participating in the competitive bidding for the next Finnish nuclear power plant.

Both nuclear plants are so-called pressurized water plants. Thus in principle they are close to the 465-Mw units now in operation at Loviisa.

At present there are several plants similar to the French plants already in operation and under construction. France's ambitious nuclear power program aims at building 34 plants by 1980 [as published].

One 1,000-Mw Soviet plant is in operation and several are being built. The Soviet Union also has big plans for the development of nuclear power in the future. The energy production of the country's European areas will in future be primarily based on nuclear power reserves.

So far a comparison of the safety factors of the nuclear technology of the plants has barely begun at the IVO. According to Radiation Security Institute director Antti Vuorinen, at the moment it is impossible for the institute to comment on their safety.

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CSO: 5100/2254

SYMPOSIUM DISCUSSES URANIUM ENRICHMENT PROS, CONS

Brisbane THE COURIER-MAIL in English 12 May 81 p 1

[Text] Australia could double the value of its uranium exports by enriching the yellowcake first, the Australian Atomic Energy Commission chairman, Professor Don George, said yesterday.

He told the Australian and New Zealand Association for the Advancement of Science Congress in Brisbane that an enrichment plant was a good idea and would benefit all Australians.

However Dr Alan Roberts, of Monash University's Physics Department, said in reply: "I can't think of an industry except the purification of heroin that can harm this nation more."

Professor George said a shortfall in the world's uranium enrichment capacity, likely after 1990, would give Australia a market.

"I see every reason to support a full feasibility study," he said. "There are already 230 nuclear power stations in the world which will require ongoing enrichment and that number will increase steadily during the next 20 years."

Professor George favored the "centrifusion" method of uranium enrichment over the longer established "diffusion" technique, already in use in the United States, France and Russia.

The diffuser method was a heavy user of electricity and a plant would have to be located close to Australia's eastern coalfields. In contrast, enrichment by centrifusion could take place anywhere in Australia in a building which would look "just like a factory".

Such an enrichment plant would have no waste emissions--only trucks delivering shipments of yellowcake for processing, and others to take away the waste in drums. A centrifusion plant, similar to ones in use in Europe and another under construction in Japan, could create 1000 jobs.

Professor George said another benefit of enriching uranium in Australia would be that a lot of presently unusable uranium would stay in Australia for future use.

The principle of enrichment by gaseous diffusion produced 7 per cent of usable uranium and 97 percent of uranium 258 which cooled down to a crystaline solid which could be stored in 44-gallon drums, he said.

Professor George said Australia had about 16 percent of the known low cost uranium reserves in the western world and these were only now being developed on a large scale.

"By the end of 1981 Australia is expected to have three uranium mines in operation producing at the rate of over 4500 tonnes a year. By 1990 Australia could be exporting 9000 tonnes a year."

Dr. Roberts, speaking in reply said Australia had enough problems without "introducing another cause for division." An enrichment industry would amount to gambling with millions of dollars of taxpayers' money.

Compared to uranium enrichment, a Saturday bet at the races would be "a blue chip investment", he said. Nowhere in the world was uranium enrichment economically self supporting.

An enrichment industry in Australia would cost $1 billion to $1.5 billion and create some 1500 jobs.

"That's $1 million per job. If $1 million in ordinary manufacturing industry can't make more than a dozen jobs I'd be very surprised," he said.

"With present technology, it is uneconomic to extract this extra uranium from the waste material.

"In the future the development of more efficient enrichment methods may enable this uranium to be depleted still further, which will save the mining of some additional ore."

Professor George said about 4.5 kg of every 5.5 kg of yellowcake could be stored for later reprocessing when technological advances permitted.

CSO: 5100/7540

BRIEFS

NUCLEAR RESEARCH CHANGES--The Federal Government yesterday announced major changes to its energy research and development program. CSIRO's non-nuclear energy research capacity will be expanded and Australia's nuclear research establishment at Lucas Heights will be consolidated into a first class nuclear science and technology organisation. CSIRO will establish an Institute of Energy and Earth Resources, which will combine existing CSIRO energy research activities with appropriate resources from the Australian Atomic Energy Commission which can be applied to non-nuclear research. A central factor in these new arrangements is the co-location at the Lucas Heights site of the continuing AAEC nuclear activities and a significant proportion of the new CSIRO Institute. This will minimise dislocation of staff and enable the most efficient use of existing facilities. The Minister for National Development and Energy, Senator Carrick and the Minister for Science and Technology, Mr Thomson, will have an effective policy role in the formulation of the overall nature and direction of CSIRO's energy research. The streamlined program of nuclear research and development would include HIFAR reactor operations, uranium enrichment, radioisotope production, waste management studies and support for regulatory and international obligations. [By Errol Simper] [Text] [Canberra THE AUSTRALIAN in English 1 May 81 p 16]

MELBOURNE URANIUM SEARCH--CRA has given notice of application to explore for uranium in the Gisborne, Sunbury and Whittlesea areas. The notices, advertised last week, covered two separate areas each of 792 square kilometres. The first, to the north-west of Melbourne, is centred on Gisborne. The second, to the north, is centred on Donnybrook. Both notices list minerals sought as uranium, gold and diamonds. A spokesman for CRA said yesterday they were "part of an on-going exploration programme in Victoria". The State Opposition Leader, Mr Wilkes, said yesterday: "A State ALP Government would investigate ways of revoking exploration permits granted to explore for uranium in outer suburban areas." Mr Wilkes said the ALP move would be consistent with its policy of refusing licences for uranium exploration in Victoria. "The permit applications also cover areas which have been rapidly developed in recent years--in particular, Sunbury, Broadmeadows, Bulla, Craigieburn and Epping." He said the ALP wanted to encourage mineral exploration in Victoria, but was totally opposed to uranium exploration and was concerned about the extent to which Victorian permits were being locked up by big companies in an unplanned manner. He said that families which had bought houses in the exploration areas would be threatened. [By Philip Chubb] [Text] [Melbourne THE AGE in English 12 May 81 p 5]

ANTI-NUCLEAR NEWSLETTER BAN--The State Library has stopped the distribution of an anti-nuclear newsletter through the metropolitan library network. For the past year the Campaign Against Nuclear Energy's monthly newsletter CANE News has been distributed free through the State Library's circulation division. It has been included in materials dropped off at each library by the division's van and put on display on the magazine shelves. The State Librarian, Mr Robert Sharman, said yesterday that the decision to stop the distribution of the newsletter had been taken by a senior officer in the circulation division. He stood by the officer's decision. It had been a mistake in the first place to allow the newsletter to be distributed to libraries. He said: "It was a value judgment by the officer concerned, but the material was blatantly political." Mr Sharman said that the Library Board was not distributing any material that put the pro-nuclear side. [Excerpt] [Perth THE WEST AUSTRALIAN in English 15 May 81 p 11]

CSO: 5100/7540

AEC CHAIRMAN: NUCLEAR PLANT UNLIKELY IN NORTH

New Delhi PATRIOT in English 6 May 81 p 4

[Text] Kurukshetra, May 5--None of the northern Indian States is likely to be chosen for one of the three atomic power plants planned for the near future. The problems are geological.

In an informal chat with newsmen after addressing the 18th convocation of the Kurukshetra University here today, chairman of the Atomic Energy Commission Dr. H. N. Sethna said areas in Himachal, J and K, Punjab etc. have rocks which will create problems besides pushing up the cost component of the plant.

He said one of the sites has already been chosen while a select committee of the commission was on the job for the selection of other sites.

Each plant would have a capacity of two units of 235 MW each. The generation cost was likely to be between 28 and 30 paise per unit. The infrastructure would cost between Rs 6,000 and Rs 7,000 per KW of power.

Dr Sethna said sites are chosen on power needs of the region and availability of sound grids. Non-availability of sound power grid has resulted in damage of 28 costly motors at Kota which would have to be replaced at a cost of Rs 75 lakhs each.

He also said that the commission may also go in for expansion of the existing plants which would be less expensive.

He said these plants would take between seven and eight years to come up depending upon the cooperation from various agencies. The Narora plant would take about three years to be ready.

Refusing to comment if India would go in for another nuclear explosion or blast and how soon or late Dr Sethna said Pakistan could well do it in June, July. "It could be any time after that, next year or even a year after."

He allayed fears about the gap in uranium supplies for the Tarapur project. "There will be no gap. A mixed oxide fuel-mixture of plutonium oxide and uranium oxide would be used though it would push up generation cost marginally. However, we can well rely on the substitute."

About the reprocessing of fuel, Dr Sethna said the International Atomic Energy Agency knows about India's capability. Of course, there was no need for permission from anyone. India was no novice in its reliance on alternative fuel either.

Dr Sethna agreed that cost factor would go up if alternative fuel had to be used. But the generation cost would still be less when compared to Tata's average of 29 paise per unit for thermal power.

Earlier, delivering the convocation address Dr Sethna talking about the magnitude of the arms race said the global expenditure on the arms race was almost a crore of rupees every minute. On the other hand, 30 per cent of the world's children have no access to education and in almost 20 of the poorest countries 80 per cent of them were unable to go to school. Yet the total military spending was more than the total worldwide Government expenditure on education.

He said the arms race does not show any sign of abating and, only a strong devotion to one's principles and an almost blind faith in the goodness of man can help us in retaining a sense of purpose in life.

Eighteen hundred and eighty-five students who passed their examinations last year were awarded degrees. Two of the awardees of Ph D in Sanskrit were blind.

CSO: 5100/7099

EDITOR PLEADS FOR NUCLEAR PACT WITH PAKISTAN

Calcutta THE STATESMAN in English 9 May 81 p 8

[Article by Rajmohan Gandhi, editor in chief of HIMMAT]

[Text] The offer of substantial U.S. arms for Pakistan imperils the sub-continent's security and increases the dangers of a nuclear holocaust, says Rajmohan Gandhi, editor in chief of HIMMAT, pleading for a limited weapons pact between the two neighbours. Even if other bilateral disputes cannot readily be resolved, India and Pakistan should at once agree to abandon the nuclear race and permit full inspecting facilities to each other. This is essential for common survival, argues Mr Gandhi in this plea for the ordinary man's welfare.

THE cool, matter-of-fact way in which many people accept a nuclear race, and a possible nuclear clash between India and Pakistan makes me marvel. Perhaps they are hard-headed facers of facts, but I cannot help feeling that they may not have thought hard enough.

"Of course," say Indian pundits, "the only answer to a Pakistani bomb is an Indian bomb." "Surely," say their Pakistani counterparts, "the only retort to the Indian threat is the bomb."

Of course and surely. Meaning that any other course would be unnatural, unthinkable or absurd. "I mean, we can't let them bully us with their bomb, can we?" Unencumbered by doubt, and with seeming unanimity, the sub-continent appears to be succumbing to the inevitability of madness. For a nuclear war is not only inhuman; it is insane. In it mass murder is transformed into mass suicide.

Whether it is a Pakistani or Indian finger that first presses the nuclear button will make little difference to the scale of the ensuing devastation, and an analysis of the cause of conflict—was it ideology or territory, panic or hate, pride or suspicion?—will be as relevant as a bazar leaflet.

HUNGER PANGS

Placing numberless lives in jeopardy, the bomb contest will tear some cloth off the bodies of the ill-clad of both lands and will add to their hunger pangs, but both nations will enter into it in the name of the poor. Differences between neighbouring lands may not appear crucial to the man who trudges six miles a day for water or strips of firewood, but when those differences turn into flames it is he who is enveloped by them.

And it is he to whom homage is paid by survivors unaffected or even benefited by a conflagration. His body is informed at the funeral that weapons were unleashed for his sake, or in defence of the sentiments he cherished. A nuclear war may reduce the number of those alive to attend the final rites of others, but we need not doubt that it will be waged on behalf of the common man.

The view as seen from India is simple. Despite its denials, Pakistan is believed to be developing a nuclear bomb. Independent European sources who can have no interest in false stories of a Pakistani bomb have described the Pakistani effort. The Americans seem ready to relax nuclear fuel conditions in Pakistan's case but not where we are concerned. Looking upon Pakistan as a substitute for Iran in its strategy for the region, the Reagan Administration is keen to give dollars and arms to Islamabad.

The Americans may expect their relationship with Pakistan to strengthen them and Pakistan against Soviet might, but history has shown that India is the only target Pakistan knows. So India must go nuclear unless she is willing to exchange her independence for the Kremlin's nuclear umbrella. QED.

The view from across the border is dramatically different. We will disagree with much or all of it, but we should know what it is. "India is not only bigger in size and conventional arms, she has exploded a nuclear device. Indians may speak of a peaceful explosion, but was there a blast or not? And India's role helped split Pakistan into two in 1972. To the east we have Soviet-backed India. And in the north, camping at the Khyber Pass are Soviet soldiers. So, unless she is willing to become a Soviet dependency, Pakistan must go nuclear and reach an understanding with the USA. QED."

One of the Indian retorts to this is that there is evidence that Bhutto thought of a nuclear device well before Pokharan. But it is not a remark that leaves Pakistanis speechless; they claim that India conceived its nuclear career long before the date of the Pokharan blast and a good deal prior to Bhutto's nuclear dreams.

Indians and Pakistanis will write conflicting histories. They will perceive the present differently. Even if they sink together in the same nuclear sea, they would probably recite their separate versions of the calamity as they go down.

It is obviously pointless to strive for agreement on the past. to agree to live together peaceably in the future, our irreconcilable histories intact in our briefcases, should be more than enough. Many however, seem to think that any search for Indo-Pakistani amity is per se foolish.

They have much to go on. With whom would India make peace? With General Zia-ul-Haq, a man obviously disliked by large sections of his compatriots? His martial law appears to be getting steadily more autocratic and unpopular; the revolt of the judges was no minor matter. The rope he has given to the conservative clergy may be appreciated by some but has annoyed many reformist Muslims. What real influence has General Zia in Bhutto's Sind, in the Frontier and in Baluchistan? Is even the military fully loyal to him? What will be the worth of an agreement India makes with one who could be repudiated any day?

It is to Pakistan as a whole, not just to its present ruler, that India ought to speak in her quest for sanity in the sub-continent. This is easier desired than accomplished. Pakistan's radio and Press are not exactly available for the asking. The message they disseminate today seems to be of a gulf-widening rather than a bridge-building nature.

TRANSISTOR AGE

Must we, however, accept that an Indian commitment to find the path to a nuclear-free subcontinent can never be conveyed to the people of Pakistan. There are factors that will help get the word across. We live in the transistor age; despite hurdles, there is a good deal of travel between India and Pakistan; and the international media reaches at least some Pakistani circles.

What is lacking is a resolve that at least in our sub-continent the hates and suspicions of yesterday and today will not be allowed to take nuclear shape. Not a timid readiness to give in on all disputed points but a passion for a patch of nuclear peace.

The Prime Minister's declaration that India will give an "appropriate" response to any Pakistani bid for a bomb earned the applause of all sections of the Lok Sabha. Who will not want to cheer a decision to strengthen the nation's defences, and one which bolsters national pride as well? But I regret that the announcement was not the nation's determination to create a sanctuary of sanity in South Asia.

It is not hard to spell out the essence of the sort of agreement that is called for. It should stipulate that, notwithstanding any current or future disputes, neither side will make a nuclear bomb, whether of atomic or hydrogen or any other variety, or detonate one on land or water, in the air or underground. And each side will permit full and adequate inspection by the other.

India has maintained all along that it has no intention of developing the bomb. Pakistan has made identical declarations. A no-nuclear-bomb pact would seem the logical next step. Instead we appear to be moving towards a competition in bomb-making!

There is of course no assurance that a treaty of the kind I have alluded to, assuming that it can somehow be reached, would be followed by agreement on other matters. The issue of Kashmir would retain its potential for friction. Despite the experience of Europe and the ASEAN countries, a South Asian common market might remain as remote as it is today. The economic and cultural prizes of co-operation might continue to elude us. The movement across the border of kinsmen, tourists, sportsmen, pilgrims, students, goods, films and literature might not grow. But the prospects for improvement in these areas will brighten. And on both sides the savings from the cancellation of a nuclear weapons programme will be considerable.

HEALTHY TIES

Partition, the blood-spilling that accompanied it and the decades that followed, has not totally destroyed the ties between India and Pakistan. "I heard from a cousin of mine the other day," a Sindhi business man in Bombay says to me. "He owns a cinema in Sind. His business has survived, as has the Hindu name of the cinema." The business man's estimate is that a fourth of the Hindu population of Larkana district stayed on where it was.

In today's climate the chances of a bomb-free South Asia are of course very slender. Is that a good enough reason for refusing to consider the goal? If it can agree on banning the bomb, South Asia would quickly develop a healthy relationship with the super Powers and with China. It is only together, not separately, that the nations of the region can say "Hands Off" to outsiders. A nuclear race within the region will on the other hand be a standing invitation for intervention and nullify our deep desire to be left alone.

Whether real or merely imagined, external dangers have had their uses down the ages. They attract the minds of the masses away from their misery. And when these dangers are linked with the Big Bomb or it is suggested that they can be met by the bomb, the fascination of the masses grows. At least for a while they are gripped when told that their pride, self-respect and security are involved.

I do not deny that these ingredients are involved today. All I say is that our security will be increased if there is a no-nuclear-bomb pact, and that in the long run our national pride and self-respect too will be heightened if we can drive the bomb out of the sub-continent.

We see the smallness of the hates of history but find merit in today's hates. Mankind's luck has held remarkably (and somewhat undeservedly, voices will say) since that sad August in 1945 when atom bombs were dropped on Hiroshima and Nagasaki. Mercifully and miraculously, the swelling stock of nuclear weapons has remained unused since. Must we tempt fortune afresh with a South Asian quota of atomic bombs? May they be cautioned who glow with glory while taking a match to an ominous fuse.

CSO: 5100/7101

IMPORTANCE OF NUCLEAR DETERRENT DEVELOPMENT CITED

Madras THE HINDU in English 19 May 81 p 17

[Article by Commodore S. Nair]

[Text] When asked as to the type of weapons in store for world war III, Dr. Albert Einstein, the prophet of nuclear technology, is reported to have remarked, "I don't know but I assure you that world war IV would be fought with stones."

This cryptic remark sums up the violent nature of the holocaust that is likely to overtake civilisation which stands petrified at the crossroads of disarmament. Notwithstanding the doom in store, the US, the USSR, the UK, France and China have armed themselves with an array of nuclear weapons and delivery systems to outwit each other.

The lesser developed nations like India, caught in the vortex of global politics amid aspirations for better living for millions, have also been forced to arm themselves for survival. Having been driven to the corner one is reminded of the meaningful words of Nehru, "so far as the world was constituted as it was, every country would have to develop and use the latest scientific device for its protection."

A discourse on the very need to go nuclear flows from two factors: the nature of the plateau on which our conventional forces have fortified themselves and an unbiased appraisal of their responses and efficacy to guarantee national security. The Indian Army of 30 divisions (approximately), Air Force of 45 squadrons and the two naval fleets have been vested with the physical responsibility of the defence of the country.

The simple fact that our forces are arrayed against those of five nations--China, Pakistan, Bangladesh, Burma and Nepal--should make any thinking individual realise the stupendous nature of the assignment.

China, a nuclear missile power with a massive army of 271 divisions and a big air force is a gigantic enemy with whom our border disputes have remained unresolved during the last two decades. Admitting that China has scores to settle with Russia, it is estimated that at least 25 per cent of its forces can at any given point of time be deployed against us.

Pakistan has now an army of 19 divisions (approximately), an air force of 25 squadrons and a naval fleet. Despite the Afghan crisis, and solely because of the support from the U.S. and China, Pakistan will be able to mount not less than 70 per cent of its forces against India.

Bangladesh has about five divisions, an air force of 10 squadrons and a small navy, a front where Pakistan used to keep two divisions and two air force squadrons. Burma and Nepal have the marginal military potential and territorial outlay to tilt the balance in favour of our enemies, should an occasion so arise.

The much publicised rearmament of our forces with fresh inventory of sophisticated weaponry will, in actual fact, mean only maintenance of status quo as our potential enemies have either been or being so armed. In short, our conventional force spectrum suffers from a clear inferiority in numerical strength, an unpalatable truth which cannot be tucked away for the convenience of our enemies.

An evaluation of the latest strategic scenario should drive home certain unfavourable compulsions which we have to grudgingly acknowledge. With the Soviet occupation of Afghanistan, the communist doctrine of domination through intervention of armed might has reared its ugly head for the first time in the subcontinent complex. The very fact that Soviet forces are deployed all along the western borders of Pakistan is an entirely novel feature, which can bring in its turn in course of time, some distasteful realities.

The event has no doubt cemented the US-China-Pakistan axis to ensure that integrity of Pakistan is not violated by any country.

The spectacular assembly of U.S. forces in Diego Garcia has tremendous military significance in that, while in 1971 it took one week for a U.S. fleet to rush to the rescue of Pakistan, it would only take a couple of hours to spread its devastating tentacles anywhere in the littoral States including India.

The recent acquisition of long-range missiles to the already held nuclear weaponry coupled with the vast conventional strength has generated a psychological bias in favour of the Chinese. While, in the absence of suitable aircraft or missiles, the IAF is unable to reach targets deep inside China, the comparable ability of the Chinese to pinpoint our cities has added a new dimension in aerial warfare.

Even after two decades, the exacting requirements of communications and logistics in the vast expanses of the Himalayan mountainous terrain, the troop heavy weapon-mix deployment in narrow confines, still plague the Army and this baffling sector can cause long battles of attrition which we can hardly afford.

Bangladesh, with many menacing postures, would not only not hesitate to inflame the insurgency in North East but show no compunction in joining hands with Indonesia for the domination of the Bay of Bengal at the most appropriate time.

Virtually Undefended

To top it all, the entire peninsular region which constitutes 40 per cent of the land mass including the islands, are left to the protective wings of the small

Navy. Possibly due to lack of combat formations or misplaced strategic approach, neither the Air Force nor the Army has any operational headquarters below the 8th Parallel.

There is hardly any air defence arrangement worth its meaning and thereby the vast industrial belts of the South lie virtually undefended. The risks taken in 1965 and 1971 just cannot be repeated as the Indian Ocean area is no longer what it used to be.

Any diversionary move against places of their choice anywhere in the peninsular region including the islands, could cause serious dislocation to our war effort, as the present conventional forces level would be inadequate and far too overstretched.

In spite of the glaring shortcomings of defence mechanism, if we still decide and continue with only a conventional force structure, there cannot be two opinions that it will have to be doubled at a staggering cost to assure a reasonable defence posture, let alone deterrent. Even if we do so, the irony of the situation is that a nuclear Pakistan in collusion with China, can dictate their own terms and make us bend our knees for unsavoury boundary adjustments at the appropriate time.

Here it is worthwhile to reflect that unlike his flamboyant predecessors, Gen. Zia-ul-Haq is an astute religious zealot, who has moved in his path with precision and gained what all he wanted, including the gateway to a nuclear Pakistan. Therefore, so long as his options are open on Kashmir remembering the inglorious defeat of 1971, we may view the developments across the border with serious concern and make lasting arrangements to protect our national integrity by capping our conventional forces with a nuclear deterrent.

Deterrent Value

It is too well known that the real strength behind a nuclear force is not its vast size or even possible use, but its intrinsic value to deter others from using it. A potential enemy's awareness that he would have to suffer the devastations of a nuclear attack, by itself will constitute a balancing force and become an effective deterrent.

In our context the brilliant expositions made by Gen. Beaufre, a champion of the French "Force de Frappe" is of special significance as France also passed through a similar stage in nuclear force evolution. His cutting arguments that the basic aim of nuclear force being prevention of war, additions to nuclear club would only result in maintaining stability has stood the test of time.

Amassing of conventional weapons alone may cause instability as the combatants are aware of the limitations of the weaponry involved. However, if the conventional forces are capped by a nuclear deterrent, the combination would provide the balance of terror for cultivating mutual respectability and restraint.

The Institute of Defence Studies has expressed that raising of a credible nuclear force for India would be a time consuming process and the exclusive inventory would have to include atomic, hydrogen warheads, aircraft, submarine, missile delivery system, air defence and anti-missile environment.

When we realise that we have yet to take a decision on going nuclear, although we have exploded a device sometime back, the arduous task of developing a nuclear force staggers imagination. However, considering our capabilities in making a bomb and our limitations in manufacturing a delivery system, we may have to go through various stages from humble beginnings to the final carving of a decisive force.

Vis-a-vis Pakistan and China

Also, our nuclear force levels against Pakistan may differ from that against China, because of distances involved. Perhaps, a reasonably credible nuclear force against Pakistan could be carved out of our Jaguar aircraft with a few bombs, which we could on our own manufacture within a short span of time.

On the other hand, the force requirements against China may, apart from our own bombs, have to consist of long-range bombers and missiles, which we have to procure from a friendly country. This small but powerful force would no doubt act as an agent of terror to keep the nuclear balance in the region as far as 2000 AD, by which time, indigenous hydrogen warheads, bombers and missiles could be manufactured in sufficient numbers to place us duly in the super nuclear club.

Though no reliable financial data are available, the cost of raising a nuclear force has been estimated from Rs. 1,000 crores to Rs. 5,000 crores spread over 10 years. Considering the astronomical financial outlay of the Sixth and possibly the Seventh Plan, which also covers a similar span of time, the cost of the force is comparatively small.

Also the employment potential of the project, the cost of the periodical small wars the presence of the nuclear force would obviate and above all the huge cost otherwise involved in the inescapable enhancement of conventional forces, which a nuclear cap alone can limit, would all have to be set off against the cost of a nuclear deterrent. In any case, since the dictates of grand strategy warrant the creation of such a force for survival, cost considerations can only be treated as premium for peaceful co-existence.

Historically, a nation which has failed to design its defence spectrum commensurate with its size, population and resources, had withered away. In our case, when the main thrust of our potential enemies consists of nuclear weaponry against which we have neither the retaliatory power nor absorption capability, if we refuse to acknowledge the realities, disastrous consequences may ensue at the most unexpected hour. This situation can only be remedied if we also arm ourselves with suitable nuclear deterrent.

CSO: 5100/7103

WRITER URGES PRIORITY FOR NUCLEAR POWER DEVELOPMENT

Bombay THE TIMES OF INDIA in English 19 May 81 p 8

[Article by K. C. Khanna]

[Text]

INDIA'S atomic energy programme has not quite run aground but the progress during the last five years has been so slow that it almost seems static. During the fifties it had acquired a tremendous thrust under the dynamic leadership of Dr Homi Bhabha and the results were visible for a whole decade beginning with 1964. In that year, the plutonium separation plant was commissioned at Trombay; the entire nuclear fuel cycle, from mining to safe storage of spent fuel was developed soon afterwards, and by the end of the sixties. India acquired a modest capability for the manufacture and export of a wide variety of radioisotopes.

That is not all. India's first nuclear power plant was commissioned in 1969 at Tarapur; the know-how for the production of nuclear fuel and sophisticated electronics was transferred from Trombay to two large undertakings at Hyderabad; uranium-233, a fissile material useful for diverse applications, was successfully separated; the PURNIMA reactor, the forerunner of the peaceful nuclear explosion at Pokhran, was built at Trombay; the first unit of the Rana Atomic Power plant came on stream in 1973; the groundwork was laid for the construction of the fast breeder test reactor at Kalpakkam near Madras, and, finally, the country extended its "nuclear option" by setting off the PNE at Pokhran in 1974.

All in all, 1964-74 was a decade of shining achievements accomplished on a shoe-string budget. Between 1948 and 1958, the annual grants for atomic energy varied between Rs. 3 lakhs and Rs. 10 crores. And for the entire 1958-74 period, the aggregate expenditure on the vast research and development facilities created at Trombay was less than Rs. 200 crores.

IDENTIFIED

Since 1974, however, the department of atomic energy has lost the momentum due to a combination of diverse factors. Many of these can now be identified. The emergence of a restive officers' association at the Bhabha Atomic Research Centre, industrial unrest in several of the Atomic Energy Commission's "commercial" enterprises and personal feuds at the top levels of the AEC's hierarchy demoralised, confused or diverted most of its dedicated and talented cadres. Conventional industry failed to keep pace with advances in the field of atomic energy; it could not manufacture huge pieces of nuclear hardware to stringent specifications in good time. The general financial stringency that followed the poor or indifferent harvests of 1973, 1974 and 1975 and the oil price hike at the end of 1973, instead of stimulating interest in atomic power, had just the opposite effect.

Above all, it was the failure of political nerve that robbed the atomic scientists of a sense of direction and pride in achievement. Shortly after their successful bang in the Thar desert, they had let it be known that PNEs, to be meaningful, must be conducted in a series. In fact, many of them were looking forward to preparing for a bigger bang by setting off a hydrogen device or a "hybrid system" that would combine fission with fusion.

The search for suitable sites and practical applications in collaboration with the Oil and Natural Gas Commission, the Department of Geology, the Central Water and Power Commission and so on was indeed thought of in the belief that a test would be conducted every six months or so for leaching copper in situ, stimulating oil and gas wells, blasting tunnels, excavating canals or training rivers.

Besides there was another significant development. For the first time after Dr Vikram Sarabhai had spelled out in 1969 the need for low enrichment of uranium to fuel a new generation of Indian thermal plants, Indian scientists began to take in 1972 considerable interest in all the four enrichment processes — the centrifuge, gaseous diffusion, the laser and the nozzle. The problem, they felt, needed to be solved not merely for peaceful uses but also for defence purposes, if need be. The quest for self-sufficiency in fuelling Tarapur and the fast breeder test reactor then under construction at Kalpakkam also spurred this effort.

LOW PRIORITY

But soon politics put paid to all this. The steep inflation in 1973-74 and 1974-75, the railwaymen's prolonged strike and the political turmoil that led to the imposition of the emergency in June, 1975 impelled the government to give a low priority to the atomic energy programme and all of the AEC's ambitious projects were put on a stud-

[illegible] No time-[illegible] were set and the [illegible] and financial support needed to ensure fruitful collaboration between the AEC and industrial enterprises was simply not forthcoming.

It might be contended that the attitude of Western powers compelled New Delhi during 1974-76 to break the momentum it had built up during the previous decade in the nuclear field. But the facts on the ground are different. True, Canada reacted sharply to Pokhran and abruptly stopped further collaboration. Spokesmen of the AEC were then saying that this would delay the completion of the second unit of the Rajasthan atomic power plant then being constructed with Canadian help by about six months. Eventually the delay extended to seven years or more! This period could have been considerably shortened if the AEC were not the victim of political apathy — but that is another story. The main thing is that the immediate official reaction in the U.S., West Germany and Britain to the Indian test was surprisingly mild. The head of the French atomic energy establishment, in fact, sent a cable of congratulations to the AEC's chairman, Dr. Homi Sethna.

Neither the Soviet Union nor China reacted to the Indian test. Both kept mum. With the solitary exception of Japan, there was no official "protest" from any major member of the Western alliance. Mr. Ted Greenwood, an American zealot in the cause of nuclear non-proliferation, thus noted at the beginning of 1977: "The United States accepts India's disclaimer of weapons intentions. This is a prudent stance insofar as the United States wants to maintain disincentives against India developing nuclear weapons systems. Indeed, to the extent that private or official commentators on the Indian nuclear explosion emphasise the distance between a single or a small number of explosions and a significant military capability, the value of the Indian test would seem to (and therefore really will) diminish". Further, he attaches some significance to the "coincidence" that economic aid to India by the "Western industrial states was increased by some $200 million less than a month after its nuclear explosion".

PRESSURE

It was not till the summer of 1977 that the pressure from the Carter administration to stop India in its tracks really began to be felt. About this time the American Nuclear Non-proliferation bill, which was eventually enacted into law in the beginning of 1978, began to take shape and the delivery of fuel for Tarapur was linked to the acceptance by India of full-scope safeguards. Though the Janata government then in power flatly refused to do any such thing, its attitude towards scientific endeavour in every field, including atomic energy, was unfavourable, if not positively hostile. Thus Mr. Morarji Desai gratuitously ruled out the development of atomic weapons "even if Pakistan goes nuclear" and drew a meaningless distinction, under pressure, between an atomic explosion and an atomic blast. In the prevailing climate, the AEC's efforts towards uranium enrichment received a further setback.

The advent last year of Mrs Gandhi's government, with its forward-looking policies, once again revived the enthusiasm of India's atomic scientists and it can be safely assumed that plans to both enrich uranium and extend the country's nuclear option are being speeded up. The fact remains that the AEC's new 20-year plan to raise the capacity for nuclear power generation from 840 Mw. at present to some 10,000 Mw. by the end of the century has been virtually shot down by the Planning Commission. The AEC had envisaged an outlay of nearly Rs. 2,470 crores to "seed" it during the 1980-85 period. Yojana Bhavan has sanctioned barely Rs. 1,050 crores.

In any case, experience shows that the AEC cannot make much progress unless it has the wholehearted backing of industrial and transport undertakings in the country. Clearly the government must impress on them the need to give the utmost priority to the task. At the moment delays in the manufacture of equipment by private and state-owned enterprises for the AEC's projects often exceed the entire period stipulated for delivery by a hefty margin. The situation can improve only if there is a national commitment to push ahead in the critical area of this demanding technology.

CSO: 5100/7102

NUCLEAR PROGRAM'S NEED FOR ENRICHED URANIUM STRESSED

Bombay THE TIMES OF INDIA in English 7 May 81 p 8

[Article by V.S.P. Kurup]

[Text]

NOW that Indo-U.S. nuclear divorce is on the cards, India must quickly chart its future course. Luckily our nuclear scientists and engineers have been utilising the period of suspense for exploring various possibilities of fuelling the Tarapur plant. These efforts have given them the confidence that they can run the reactor on an alternative fuel. They say the plant will not be shut down even for a day.

But the issue is not one of just operating the Tarapur plant. It is one of putting our entire nuclear energy programme on a viable basis so that it can grow in strength and vitality and fulfil the role expected of it. That means a drastic review of our nuclear energy strategy. This reappraisal should not only be designed to make up the slippage in our nuclear energy programme, but also to steer the country clear of the kind of pulls and pressures it came under in the last few years and which is likely to increase hereafter.

Not that India can be pushed around even now. Its technological strength is too great for that. It is the only country, for instance, apart from nuclear club members, to possess the complete nuclear fuel cycle knowhow. It has the capability to set up facilities right from exploration, mining and processing of ores, through fuel fabrication, heavy water production and reactor construction to reprocessing of spent fuel and waste management.

This rare mastery over nuclear technology is being demonstrated in its unaided construction of a natural-uranium fuelled power plant at Narora and the even more complex experimental fast breeder reactor at Kalpakkam. Even in the more sophisticated and secret business of fabricating a nuclear explosive and its testing underground, India has given ample evidence of its technological excellence. These creditable achievements notwithstanding, however, Tarapur will be the touchstone of our overall capabilities. On the form of our response to the challenge now being posed will depend the pace and direction of the country's nuclear power programme.

Three options

India has three options in regard to the continued operation of Tarapur. One is to approach other friendly countries, like France and the Soviet Union, for enriched uranium. This may again bring up irritants like fullscope safeguards, inspections and so on that soured relations with the U.S. India may also have to put up with unreasonable price escalation and uncertain fuel supply, depending on changes in the international climate, or bilateral relationship with the party concerned. Thus India will be well advised to aim at nothing short of self-sufficiency in nuclear fuel.

That brings up the second option, the use of a mixture of oxides of natural uranium and plutonium (MOX) in the Tarapur plant instead of enriched uranium. This fuel mixture has not been tried anywhere as yet, but studies by our experts have proved its suitability. When Dr. Sethna, chairman of the Atomic Energy Commission, claimed the other day that India had successfully tested an alternative fuel for Tarapur, he was referring to this mixture. It is said that MOX fuel can be fabricated at the nuclear fuel complex at Hyderabad with slight modification of the facilities there.

MOX fuel, however, suffers from a grave handicap. Its fabrication is a "dirty" business and radioactive pollution by it is a serious possibility. While one or two operations may not pose any serious danger to the environment, MOX fuel fabrication on a continuing basis can. There is yet another matter of some concern about the MOX fuel, which may have to be closely examined.

India has clear title to the spent fuel and hence there is no difficulty in reprocessing it and recovering plutonium from it. But there is anxiety that the use of this fissile material for preparing MOX for Tarapur will affect our fast breeder programme adversely. Our nuclear power planners had intended to use this plutonium as initial charge in the fast breeder reactor under construction near Madras and then, on the basis of the study, to proceed and set up a chain of breeders to use our vast reserves of thorium. Obviously, therefore, the use of the plutonium in making MOX fuel for Tarapur will further delay India's fast breeder programme already behind schedule.

There is a way out of this predicament if we go in for uranium enrichment. We have the necessary expertise, basic infrastructure and financial ability. So setting up enrichment facility need not present serious problems. If Pakistan with its meagre resources can put together two enrichment facilities — a prototype one and a commercial one — India should have no great difficulty in doing so.

Bhabha's plan

One argument against setting up an enrichment facility is that it is uneconomic for us. Tarapur alone is using enriched uranium — it needs just 20 tonnes a year — and therefore creating a facility costing over Rs 200 crores for feeding that one plant is simply wasteful. But this represents an inadequate appreciation of the situation.

While deciding the salient features of India's nuclear energy programme in the early sixties Dr. Bhabha preferred the CANDU design (with natural uranium as fuel and heavy water as moderator) to the less complex enriched uranium-fuelled reactor for two main reasons. It obviated the need for costly uranium enrichment facilities and its fuel economy was far superior. Thus centring on CANDU-type reactors he planned a three-tier nuclear programme with natural uranium fuelled thermal reactors in the first phase, plutonium-thorium hybrid in the second stage and complete thorium cycle in the third and final stage.

It was a well-conceived plan, but owing to various factors it could not be implemented in the order and time-frame Dr. Bhabha had laid down. By 1980 the whole plan fell behind schedule by over a decade. Dr. Sarabhai and Dr Sethna changed and adjusted the original power development profile to fit in with existing realities. The latest target is 10,000 Mw by 1995.

Dr. Sethna said the other day that India would have 10 more reactors of the 235 Mw Narora model and 12 reactors of 500 Mw capacity in the next 20 years. He does not say how he is going to achieve this target while we could tot up only about 1,000 Mw in the last 20 years.

Funds may not be a constraint, but our industrial infrastructure is. It is not yet capable of executing sophisticated engineering constructions on such a mass scale. Production of heavy water also will be a major bottleneck. We will need 13,000 tonnes of heavy water to meet the capacity target of 10,000 Mw. As against this our present capacity (not production) is only 315 tonnes. It is difficult to see how we can fill this gap in heavy water production without which the power plants will remain uncommissioned even if we are able to build them.

Much of this difficulty may be resolved if we set up uranium enrichment facilities and go in for Tarapur-type plants along side CANDU reactors. That will not only broaden our nuclear fuel technology base, but reduce the need to build an ever-increasing number of heavy water plants with concomitantly huge outlays on them. There are also some spin-off benefits from an enrichment facility. It will give an enormous push to our ambitious fast breeder programme.

CSO: 5100/7100

NIGERIA

BORNO WORKS COMMISSIONER CONDEMNS NUCLEAR MOVE

Kaduna NEW NIGERIAN in English 4 May 81 p 11

[Article by Sani Haruna]

[Text]

THE Borno State Commissioner for Works, Alhaji Mohammed Abba Gana, has condemned any move to push the country into the nuclear race.

Speaking to the New Nigerian in an interview, the commissioner said Nigeria " is not mature enough to embark on the project." He pointed out that a nuclear project was one of the most delicate and dangerous projects which required maximum care.

Alhaji Mohammed Abba Gana said judging from our attitude to work, if a nuclear plant was established, it was most likely that it would not receive the kind of efficient handling it required. He warned that if the country embarked on the project and failed to manage it efficiently especially towards its safety, the project would be disastrous.

The commissioner remarked: When we cannot even manage NEPA efficiently and ensure efficient telephone services, I doubt if we can ensure the safety of a nuclear blast": He then warned; "We should not run too fast to break our legs".

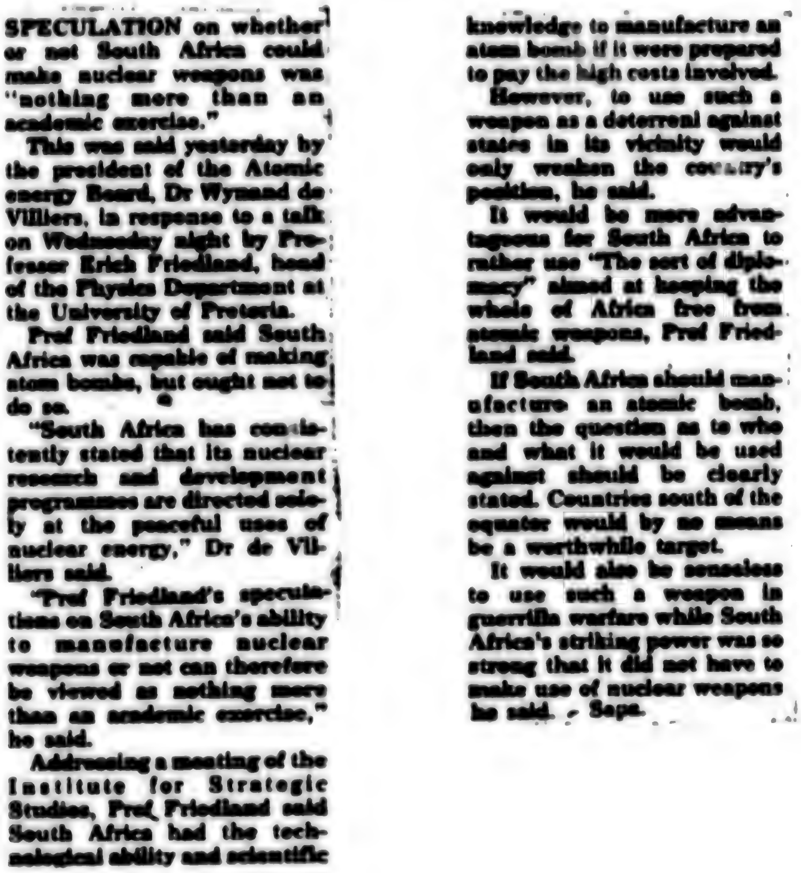
Alhaji Mohammed Abba Gana suggested that instead of joining the nuclear club now, the Federal Government should pay more attention to utilising solar energy for the developmemt of our rural areas. He said the country should go nuclear at the right time.

CSO: 5100/4939

AEB CHIEF DISCUSSES NUCLEAR BOMB CAPABILITY

Johannesburg THE CITIZEN in English 8 May 81 p 10

[Text]



SPECULATION on whether or not South Africa could make nuclear weapons was "nothing more than an academic exercise."

This was said yesterday by the president of the Atomic energy Board, Dr Wynand de Villiers, in response to a talk on Wednesday night by Professor Erich Friedland, head of the Physics Department at the University of Pretoria.

Prof Friedland said South Africa was capable of making atom bombs, but ought not to do so.

"South Africa has consistently stated that its nuclear research and development programmes are directed solely at the peaceful uses of nuclear energy," Dr de Villiers said.

"Prof Friedland's speculations on South Africa's ability to manufacture nuclear weapons or not can therefore be viewed as nothing more than an academic exercise," he said.

Addressing a meeting of the Institute for Strategic Studies, Prof Friedland said South Africa had the technological ability and scientific knowledge to manufacture an atom bomb if it were prepared to pay the high costs involved.

However, to use such a weapon as a deterrent against states in its vicinity would only weaken the country's position, he said.

It would be more advantageous for South Africa to rather use "The sort of diplomacy" aimed at keeping the whole of Africa free from atomic weapons, Prof Friedland said.

If South Africa should manufacture an atomic bomb, then the question as to who and what it would be used against should be clearly stated. Countries south of the equator would by no means be a worthwhile target.

It would also be senseless to use such a weapon in guerrilla warfare while South Africa's striking power was so strong that it did not have to make use of nuclear weapons he said. - Sapa.

CSO: 5100/4938

BRIEFS

URANIUM PRODUCTION--South Africa's uranium production last year was 28 percent higher than in the previous year. And last year's production--6,146 tons of uranium--was 55 percent higher than that of 1978. It came from 19 plants fed by 21 mines, the president of the atomic energy board, Dr J W L de Villiers, said in a statement issued in Pretoria. Dr de Villiers also released an assessment of South Africa's uranium resources, which is done every two years. [Text] [Johannesburg THE CITIZEN in English 20 May 81 p 19]

CSO: 5100/4938

BRIEFS

URANIUM PROSPECTING--Uranium prospecting in Siavonga, Kafue and Luangwa in Lusaka and Southern provinces will start next month. Minister of Mines Mr Mufaya Mumbuna, expressed satisfaction with the clearing of land mines in the areas to pave way for the prospecting teams. Mr Mumbuna said because of the cooperation which security officials received from villagers in removing landmines, prospecting would start next month.--Zana [Text] [Lusaka SUNDAY TIMES in English 31 May 81 p 1]

CSO: 5100/4940

FINLAND

INSPECTION OF SOVIET-BUILT NUCLEAR PLANT REVEALS 200 FLAWS

Helsinki HELSINGIN SANOMAT in Finnish 10 May 81 p 9

[Article: "Inspection of Evaporators Revealed 200 Flaws in the Loviisa I Plant"]

[Text] An inspection of the evaporators in the unit one power plant at Loviisa revealed 200 flaws lowering quality standards. The defects are primarily related to the welding phase when the evaporators were built in the Soviet Union.

According to the report of the Radiation Safety Institute (STL) the defects relate primarily to quality control. If closer attention had been paid to the level of quality control, the defective evaporators would not have reached the operational stage.

Temperature increases in the welded joints have also been observed in the Loviisa unit one power plant's pressure vessel, which has been plagued with problems. The Radiation Safety Institute anticipates that the pressure vessel acting as the nucleus of the power plant will also have to be repaired in the Loviisa unit two power plant after a year's operation.

Last year all of Finland's four nuclear power plants managed to operate simultaneously for 2 weeks. The unit one power plant at Loviisa has now been ready for 4 years. However, last year the nuclear power plant was under repair or maintenance for 7 months.

Last year the unit one power plant of Teollisuuden Voima [Industrial Power] operated more efficiently than Imatra Power's Loviisa power plant. Three times as much energy was obtained from Olkiluoto than from Loviisa even though Olkiluoto is only half again as large as the power plant at Loviisa.

The unit two power plant at Loviisa and Olkiluoto were put into operation in October of last year. During the final quarter of last year the Radiation Safety Institute recorder nine incidents significant from the point of view of nuclear safety.

The Radiation Safety Institute states in its quarterly report that the incidents did not essentially impair or reduce the safety of the plants.

The recorded incidents also did not cause any harm to the plant's personnel or neighboring residents.

10576
CSO: 5100/2250

RESTRICTIONS ON NUCLEAR EXPLOSIVES, LASERS, LAUNCHERS

Paris LE MONDE in French 19 May 81 p 48

[Article: "Nuclear Explosives, Lasers, and Satellite Launchers Are Now Subjected to Export Limitations"]

[Text] A decree of 11 May, published in the Journal Officiel on 17 May and followed by several application notices, subjects exports of nuclear devices and explosives, special tools designed for their manufacture and test, laser weapons and their specific components, rockets and space launchers and tools and components used in their manufacture, to the controls usually applied to deliveries of war materiel to foreign countries.

This decree, signed by the prime minister and all interested ministers of a government that had not yet resigned, completes a series of decrees dating back for the most part to 12 March 1973. These decrees subject exports of war materiel and similar equipment to preliminary approval by a ministerial commission. From now on nuclear devices, their special components and parts used in neutron sources for weapons, and tools (particularly photographic, electronic, and X-ray equipment) used to manufacture and test nuclear explosives, will be listed among equipment subject to export limitations. Export of laser weapons, their optical parts, fire control devices and components related to this technology are also subjected to preliminary control and approval.

The decrees regulating the sale of these devices to foreign countries already listed war materiel, weapons, and ordnance subject to ministerial control, but besides nuclear explosives and laser weapons which have just been added to the list, the decree of 11 May 1981 includes rockets and space launchers which now belong to the controlled category.

All export of these devices without preliminary authorization is therefore prohibited, except where they are delivered "within a non-sensitive system, for instance a satellite." The main objective of the decree includes: traditional launchers, solid-propellant rockets and particularly engines for these devices--solid and non-cryogenic liquid-propelled. As a consequence, all components used in propellants will be strictly regulated, as well as machines used in manufacturing certain rocket bodies and tanks.

Obviously, the government has included in the list of equipment subjected to this regulation all guidance devices: inertial guidance platforms, accelerometers, gyroscopes, and computeres; and also materials used in the reentry heads of ballistic missiles and measurement instrumentation used in testing their quality and that of electronic components included in the systems.

We can therefore predict that French equipment used in the European launcher Ariane, particularly the engines and on-board computers, will also be the object of a request for authorization.

6445
CSO: 5100/2256

PSOE ADVOCATES PHASEOUT OF NUCLEAR ENERGY

Madrid DIARIO 16 in Spanish 16 May 81 p 10

[Text] Madrid--The socialists are in favor of a gradual phaseout of nuclear energy in Spain, "since this energy is a trap which makes a satellite out of the country and, on top of that, is not necessary if alternative sources are used," according to Carlos Davila and Juan Tesoro, PSOE [Spanish Socialist Workers Party] technologists and co-authors of the book "La crisis de la energia nuclear" [The Nuclear Energy Crisis].

PSOE vicesecretary general Alfonso Guerra, who introduced the above-mentioned book and is the author of its prologue, described nuclear energy as "backward." He also said "this is an energy for crises only."

Energy Politicized

The PSOE vicesecretary general later analyzed the nuclear alternative from the political and social points of view. Guerra concluded that the anti-nuclear struggle is only another form of the class struggle, "a fact recognized even by a man as naive as the president of the Spanish Atomic Forum, former industry minister Alfonso Alvarez Miranda."

According to Alfonso Guerra "the nuclear option is a political option of very specific economic interests; it is hipocrisy to pretend that energy is not politicized."

Chemist Carlos Davila and engineer Juan Tesoro, members of the PSOE technical apparatus, stated that Spain is heading toward abandoning nuclear energy "because it has been abandoned by countries such as the United States and, even in France, where the most ambitious program existed, Mitterrand's victory will stop the process by limiting it to completing on-going projects.

Dead-End Street

The socialist technologists believe there is not enough uranium to last more than 10 or 20 years. The lack of enriched fuel will dictate a change of direction; otherwise, countries committed to conventional nuclear programs like the ones that exist today can find themselves in a dead-end street.

According to these experts, Spain's current policy involving the program for coal-fueled thermal power plants and the promotion of hydroelectric energy (small dams program) and other alternative sources is quite sensible. "But at the same time, the nuclear program now being followed leads to an overabundance of equipment for the production of electric energy." According to the socialists, this overabundance is created by business interests: their business begins with the very construction of the nuclear plants.

9341
CSO: 5100/2260

FOREST SERVICE LICENSES SEARCH FOR NUCLEAR WASTE SITE

Stockholm DAGENS NYHETER in Swedish 13 May 81 p 11

[Article: "Twenty-Five Potential Sites for Final Storage"]

[Text] The Swedish Forest Service has now granted the Swedish nuclear power companies permission to examine about 20 locations in the country in their search for a site to permanently store the Swedish nuclear waste.

It is Swedish Nuclear Fuel Supply (SKBF) -- owned by the nuclear power companies -- which has picked out about 25 sites possible for final storage. Twenty of these sites are on property owned by the Forest Service, which has now given permission for closer studies.

The sites are Rago, Raby, Fjallveden and Lid in the Nykoping municipal district, Aker 7:1 in Strangnas municipal district, Kamlungetjalen 2:1 in Kalix municipal district, Arjep, Juowatjokko, Tjiuru and Liedakka in Kiruna municipal district, Tvaraberget, Kloveberg and Vidmyrliden in Skelleftea municipal district, Tolo 8:1 and Tolo 9:1 in Kungsbacka municipal district [text illegible] Tremingshult in Vargarda municipal district, Bedens Crown Forest Area, Boda 2:1 and Gamsen 2:1 in Boras municipal district, as well as Skarsnas 9:1 in Vanga parish.

SKBF's inquiry is based on a study by the Swedish Geological Research Service (SGU). With the aid of topographical maps, aerial surveys and so on they came up with about 100 areas. SKBF then eliminated the least interesting ones, for example those considered inaccessible from the aspect of transportation or judged unsuitable for other reasons. This leaves about 20 sites in the whole country.

Field Studies

The next step in SKBF's studies will be to make field studies at the sites. At that time crack zones, water content and other features of the rock will be checked. After yet another filtering among the sites, test drilling will be done [text illegible] most interesting. At that time the SKBF will also inform the municipal district and the general public.

Up to now the program advisory board for radioactive waste (prav) has handled the studies of where storage of the nuclear waste will finally take place. Those studies will not be taken over by the SKBF.

So far the research program has resulted in test drillings at Kynnefjall, Voxnan and in Taavinunnanen outside Kiruna. The drillings at Kynnefjall were halted, however, due to the protests of the population. It is as yet uncertain when they will resume.

The SKBF emphasizes that a definite decision as to where the final storage site will be will not be made until around the turn of the century. Construction of the final storage facility will not begin until the year 2010. Until then the nuclear fuel will be stored in the future so-called interim storage at Oskarshamn [text illegible]

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SWISS NUCLEAR EXPORT DEALS EXAMINED

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[Article by D. W.: "Swiss Nuclear Deals: An Eye for an Eye, a Tooth for a Tooth"]

> [Text] Switzerland's nuclear exports refuse to disappear from the headlines: Cora AG [Inc], a company located in Graubuenden [Canton], has allegedly halted all deliveries of nuclear technology to Pakistan following an attempt to blow up the home of one of its engineering executives. At the same time, the Federal Council has once again refused in a written reply to a simple interpellation posed by National Councillor Andreas Gerwig (SP/BS) [Social Democratic Party/Basel Canton] to reveal the names of those firms which the United States had accused last fall of violating the nuclear test ban treaty. But the reasons behind the American charges are just as dubious: They are aimed indirectly at Switzerland's role in verifying adherence to the test ban treaty, while at the same time they shield American transactions of the same type.

In the spring of 1979, only a few months after the Swiss councils had come around to ratifying the nuclear test ban treaty, the United States charged Switzerland for the first time with helping Pakistan build the first Islamic atomic bomb by permitting the unsupervised delivery of high-grade technology to that country. At that time the Federal Council apologized at least verbally and — according to its official statement — exacted pledges from the suppliers promising to send no more components for Pakistan's nuclear program, which is allegedly being financed by Libya's Gaddafi. In doing this, the federal government continually stressed that the letter of the nuclear test ban treaty had not been violated.

Heavy-Water Transaction

But then, when representatives of the Sulzer AG in Winterthur and Argentina's military junta in Neuquen (Argentina) signed the contract on 14 March 1980 for delivery of a heavy-water plant, the governments of Canada and the United States mounted the same arguments as the Swiss opponents of weapons exports and nuclear power: On both counts, the latter group pilloried the largest export order in Sulzer's history as a "bombs deal" and called on the Federal Council to deny the required export license. It was charged that General Videla's regime was "in the anteroom of the nuclear club." The purchase made in Switzerland would permit the Argentine military to supply its civilian reactors with heavy water without having to depend on other countries, thus enabling it without fear of embargo to use the plutonium produced "to construct an atomic bomb within 4 years" ("Association Against Nuclear Exports"). National Councillor Hansjoerg Braunschweig (SP/ZH) /Social Democratic Party/ Zurich Canton/ went so far as to call the Sulzer deal "a threat to world peace."

These objections did not prevent the Federal Energy Office from issuing the export license on 12 June "after consultation with the federal government." Among those angered by the move were not only the pacifists but, once again, the governments of Canada and the United States. The nuclear superpowers from across the sea argued that, although the letter of the nuclear test ban treaty and the supplementary guidelines of the "London Club" had not been violated, their "spirit" had indeed not been observed. In fact, once Sulzer has constructed the heavy-water installation, at least in theory Argentina will possess the complete chain for the production of fissionable material needed to manufacture bombs.

For Peaceful Purposes Only?

But the federal authorities have negotiated a treaty with the Argentine government which subjects the heavy-water installation supplied by Sulzer to international controls. Those in power in Buenos Aires are thus obligated to use the Sulzer technology for peaceful purposes only.

For its part, the Winterthur supplier is accusing Canada in particular of hypocrisy: "Canada would like to have been the supplier." Indeed, the North Americans did not intervene until they saw their own plans going awry. They had tried earlier to land the contract for a reactor (Atucha II) and a heavy-water facility at the same time. But the Argentines, who have not signed the nuclear test ban treaty, did not want to become dependent upon a single country: They ordered the reactor from the FRG and the heavy-water plant from Switzerland, even though Sulzer's bid was higher than that of its FRG competitor.

Abuse of Nuclear Test Ban Treaty?

The attacks by the United States and Canada on Switzerland's "nuclear sovereignty" were not restricted to verbal protests, however. For more than a year — starting in the fall of 1979 — the United States blocked all permits for exports of spent fuel elements from Swiss nuclear power plants. These export licenses are required under the terms of the test ban treaty. Switzerland was left holding its nuclear waste, which was awaiting reprocessing in France. Christian Favre, deputy director of the Federal Energy Office and head of the Energy Technology Department, had this to say to the BASLER ZEITUNG: "Under Carter, the American authorities were against reprocessing. That's why we didn't get any more export permits."

That is the official version. Swiss officials, meanwhile, are privately talking about abuse of the test ban treaty. They are saying that the United States and Canada have been using the rights of control stipulated in the treaty for their own economic advantage instead of promoting the peaceful use of atomic energy worldwide — as called for by the agreement. Fitting into this picture is the export — illegal under U.S. law — of 36 tons of enriched uranium from the United States to India, even though that country has not signed the nuclear test ban treaty and, with the involuntary assistance of Canada, tested a plutonium bomb in 1974 — to be sure, merely "for peaceful purposes," as was claimed at the time. President Carter himself had made approval of the nuclear export to India palatable to Congress last year.

Canada Sets Conditions

Canada as well is contributing to the increasing exasperation of the economic and government sectors in matters pertaining to nuclear technology: As a precondition for delivery of the uranium which was contractually guaranteed long ago by the Leibstadt Nuclear Power Plant AG, Canada is demanding that Switzerland sign a supplementary agreement which stipulates substantially tighter controls than before on nuclear materials and fuels. Political circles closer to the export industry than to the electricity industry have succeeded so far in blocking a decision by the Federal Council on this supplementary agreement. The nuclear power plant people are the losers here, since the price of uranium was $ 9.00 per ton 6 years ago when the commitment was made to supply the fuel, while the same amount costs more than 5 times that much today.

The ploys of the nuclear superpowers have not been without effect on the stance of Switzerland and other states with respect to the nuclear test ban treaty. The moment of truth came on 11 August 1980, when the "Second Nuclear Test Ban Treaty Review Conference" opened in Geneva. For several weeks the world's nuclear have-nots joined forces with the smaller nuclear powers disillusioned by the test ban treaty to rebuke the big powers. Swiss diplomats, too, spoke in unusually harsh tones. "Switzerland is in the process of becoming the informal spokesman for states whose nuclear industries are being harassed," noted Anton Keller, a well-known critic of the nuclear test ban treaty, in his report on the conference. Keller is hoping for the test ban treaty to collapse in the near future, so that international nuclear policy can be "put back on a basis of mutual trust between the countries." He calls the 1970 agreement an "inefficient attempt to slow the progress of history."

New Charges by the United States

Switzerland's role as spokesman for the nuclear midgets did not suit the United States. Barely a month after the Geneva conference had ended in chaos, government sources in Washington launched new charges against the Swiss by way of deliberate leaks: It was said that companies in the land of the Alps were continuing to supply Pakistan with know-how and material that could help that developing country acquire the atomic bomb before the end of 1981. The companies involved — including the Cora AG in Chur — did not deny having supplied Pakistan with components for a uranium-enrichment installation. But they said that the products under criticism had many other applications and did not come under the provisions of the nuclear test ban treaty and the London Club.

The Federal Council's initial reaction to the new U.S. charges was to promise a close reexamination of the deals with Pakistan by Swiss firms. In mid-November — following Reagan's election victory — the federal government sent its internationally recognized specialist in nuclear technology, Claude Zangger, to Washington. The deputy director of the Federal Energy Office apparently was to clarify the conditions under which the Carter administration would be willing — before its term of office expired on 20 January 1981 — to issue the permits for the export of spent fuel elements from Swiss nuclear power plants that had been blocked since 1979. Further delays resulting from the change in administrations were feared — probably with reason.

Switzerland's About-Face

Then between Christmas and New Year's, an affable Claude Zangger disclosed to the press at the Federal Building "upon inquiry" that "in the future, certain shipments from Switzerland to a uranium-enrichment facility in Pakistan" would "possibly be prohibited." When asked the reason for the Federal Council's about-face, Zangger explained that Pakistan had "been cheating" on the international export control system and was refusing to allow its installations to be inspected by the International Atomic Energy Organization — IAEO — in Vienna.

However, the federal government could not have learned of this until the spring of 1980 at the latest, from an examination of documentation prepared by the "Association Against Nuclear Exports." These documents, copies of which were very widely circulated and which also prompted parliamentary inquiries, describe in detail how Pakistan has "acquired" the technology of the atom bomb from all over the world while circumventing the test ban treaty. It is possible that Switzerland stopped a shipment by the Cora AG to the aggressive Pakistani military as early as November, following Zangger's trip to Washington. Bern is saying nothing about the affair, while the Chur-based company is vigorously denying this report.

Be that as it may: In the same breath with the announcement of the tougher policy toward Pakistan, Zangger announced in December that he was expecting the permits for the export of nuclear power plant fuel rods "in the second half of January." And lo and behold: On 19 January, the day before Carter was replaced in office, the responsible officials in Washington signed the export licenses which had lain buried since the fall of 1979. As the Federal Energy Office confirmed when queried, the documents have meanwhile arrived at the Federal Building.

The Pakistan Deal

D. W. — Reports by the CIA, the American intelligence agency, mention five Swiss companies which are said to be behind the Islamic atom bomb, though only two are identified by name. These are the Cora Engineering AG in Chur and the Vacuum Apparatus Engineering AG in Haag, SG [Saint Gall Canton]. The two companies each supplied about 10 percent of all the components for the entire uranium-enrichment installation which is being built on the gas-centrifuge principle. According to the INTERNATIONAL HERALD TRIBUNE on 22 September 1980, three other Swiss firms sold the developing country ventilation systems, aluminum tubing and machine tools for this facility. The English press mentioned by name the Singen Aluminum Rolling Mill (the Alusuisse Group) and Shell Switzerland.

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